IN THE CLAIMS

Please amend the claims as follows:

1. (original) A data processing device (3) for reconstructing the current flow in a vessel system (6), comprising a memory (4) with measurement data (mi) describing an observed progressive propagation of a medium in the vessel system (6), wherein the data processing device (3) is equipped to reconstruct, from the measurement data, a model propagation (ti) of a medium within the vessel system in such a way that, for the vessel system:

- the difference between the observed propagation and the model propagation is minimal, and
- the model propagation is monotonously progressive.

2. (original) A data processing device as claimed in claim 1, equipped to reconstruct the model propagation (ti) in such a way that it additionally has as smooth as possible a progression.

3. (original) A data processing device as claimed in claim 1, characterized in that the memory (4) contains, as measurement data, bolus arrival times mi, wherein i=1,…N are indices for various individual sections of the vessel system (6), and a bolus arrival time mi is the time, determined in a measurement, which a medium requires, starting from a predetermined starting point, to reach vessel section i.

4. (original) A data processing device as claimed in claim 3, characterized in that it is equipped to calculate model bolus arrival times (ti) for the vessel sections i in such a way that:

$$\Delta_i = t_i - t_{p(i)} \geq 0 \quad \forall\, i = 1, \ldots N-1 \qquad (1)$$

and the cost function

$$E = \sum_{i=1}^{N} |m_i - t_i| \qquad (2a)$$

is minimal, wherein the values p(i) each hereby reflect the index of the vessel section located in front of vessel section i in the direction of flow.

5.(original) A data processing device as claimed in claim 4, characterized in that it is equipped additionally to take into account in the cost function the variable:

$$E_m = \sum_{i \in I} \left| t_i'' \right| \qquad (2b)$$

wherein I contains the indices of all vessel sections with a predecessor and a successor, and t_i'' is the discrete approximation of the second derivative in vessel section i.

6.(original) A data processing device as claimed in claim 4, characterized in that it is equipped to calculate the model bolus arrival time (ti) using linear programming.

7. (original) A data processing device as claimed in claim 1, characterized in that it is coupled with a display device (7) in order that the model propagation may be graphically represented.

8.(currently amended) An assembly for observation of the current flow in a vessel system (6), comprising an image-generating device (1) for generating images of the vessel system (6), from which measurement data (mi) describing the progressive propagation of a medium may be obtained, and a data processing device (3) as claimed

in <u>claim 1</u> ~~any one of claims 1 to 7~~ for reconstructing the current flow in the vessel system.

9.(original) An assembly as claimed in claim 8, characterized in that the image-generating device is an X-ray apparatus (1).

10. (original) A method of reconstructing the current flow in a vessel system (6), comprising the following steps:

a) Obtaining measurement data (mi) describing an observed progressive propagation of a medium in the vessel system (6).

b) Reconstructing a model propagation (ti) of a medium in the vessel system in such a way that:

- the difference between the observed propagation and the model propagation is minimal, and

- the model propagation is monotonously progressive.